

CHAPTER 2

WATER QUALITY



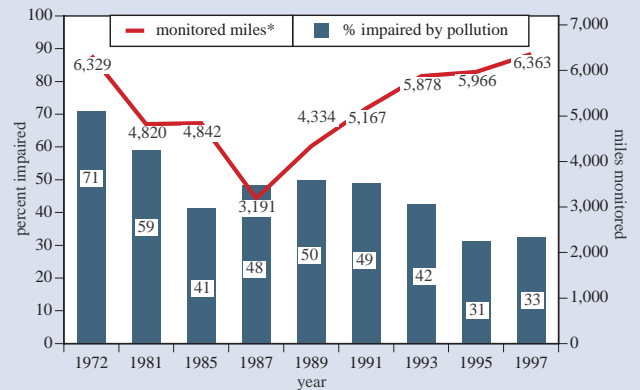
Indicator 1: Water Quality of Rivers, Streams

BACKGROUND Kentuckians enjoy the benefits of an estimated 89,431 miles of rivers and streams. The quality of these waterways varies from severely degraded to clean enough for swimming, fishing, or use as a drinking water supply. The Kentucky Division of Water maintains a network of 44 ambient water quality stations throughout the state to monitor water quality. In 1997, these stations monitored 7% of the 89,431 stream and river miles for 32 different parameters. While this data may not represent a statistically valid sample of water quality statewide, it does provide a general indicator of water quality trends and pollution sources in Kentucky.

Figure 1

Note: Based on monitored river and stream miles. 1972 and 1981 data include river and stream miles monitored and evaluated. Source: Ky. Reports to Congress on Water Quality

Percent of Kentucky Waterways Impacted by Pollution



SOURCE

In 1997, agricultural activities were the leading source of water pollution in monitored waterways. Contaminated runoff containing agricultural nutrients and chemicals is impacting 20% of the polluted stream miles. Coal mining activities (active, inactive, and abandoned mines combined) impacted 19% of the miles impaired, while sewage treatment plants impacted 17% of the monitored waterways. Disease-carrying pathogens, often associated with untreated or poorly treated animal and human waste, remains the principal pollutant, impairing 31% of the monitored stream miles. In 1998, the state declared that 234 miles of Kentucky's rivers and streams were too polluted for swimming because of high levels of fecal coliform bacteria. Fecal coliform in water indicates the possible presence of pathogens in the water which can cause ailments such as diarrhea and Hepatitis A if ingested or absorbed through the skin.

GOAL

Safeguard from pollution the uncontaminated waters of the Commonwealth; prevent the creation of any new pollution of the waters of the Commonwealth; and abate any existing pollution per KRS 224.70-100.

PROGRESS

Efforts to restore Kentucky's waterways have been ongoing since the passage of the federal Clean Water Act in 1972. During the past 25 years, progress has been made in improving water quality in the state. For example, in 1972, 71% of the monitored waterways were impaired by pollution compared to 33% in 1997.

A review of ambient water monitoring data reveals that several waterways remain significantly degraded by pollution. For example, a 664-

Figure 2

*Note: Based on monitored and evaluated waterways. * Miles not or partially supporting one or more uses (swimming, fishing, drinking water). Source: Ky. Division of Water*

Monitored Stream and River Miles in Kentucky Impacted by Pollution, by River Basin (1997)

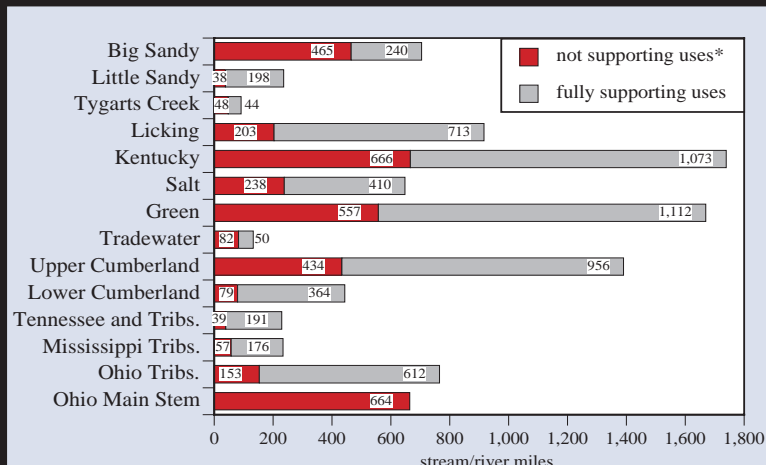
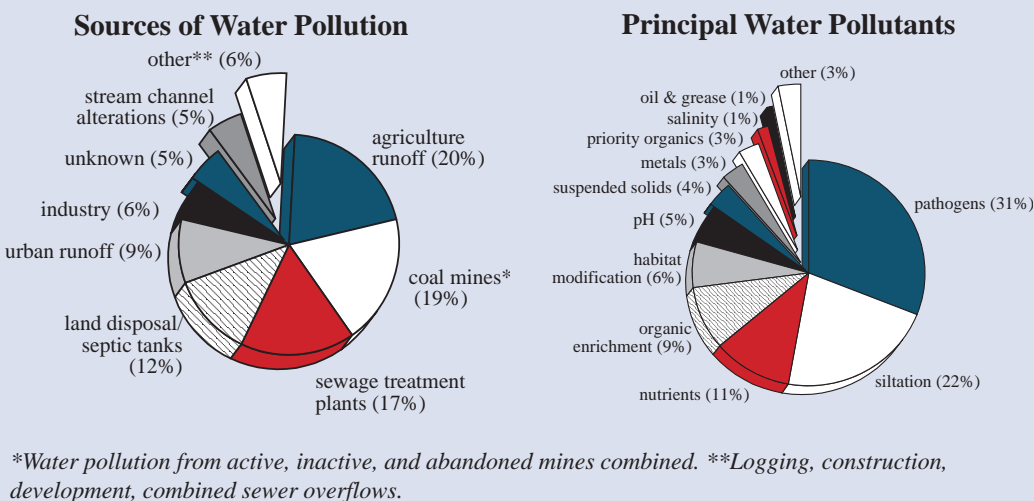


Figure 3**Sources of Water Pollution and Principal Pollutants in Kentucky (1997)**

Note: Percentages differ from previous State of Kentucky's Environment reports due to the addition of stream and river miles with minor and major pollution impacts (previous reports only listed miles with major pollution impacts). Many waterways have multiple sources of pollution which are reflected in this chart. Source: Ky. Div. of Water



mile stretch of the Ohio River bordering Kentucky still does not meet or only partially meets its swimmable and fishable uses. And half of the stream and river miles monitored within the Big Sandy, Tygarts Creek, and Tradewater River basins are not supporting various uses due to pollution. The North Fork of the Kentucky River remains one of the most polluted waterways in the state based on miles polluted and uses impaired.

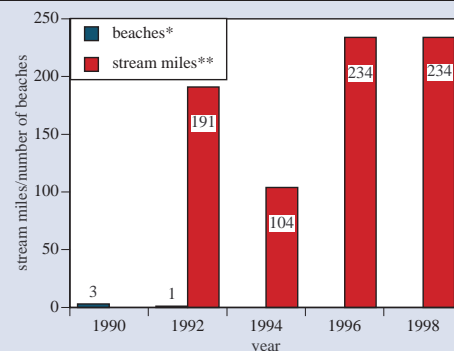
State efforts are now underway to better target water pollution problems by watershed. The Kentucky Watershed Management Initiative will coordinate state, federal, and local pollution control efforts by watershed. Kentucky's 13 watersheds have been grouped together in five Basin Management Units (BMU) as follows:

Study Year	Basins
1998	Kentucky River
1999	Salt and Licking Rivers
2000	Cumberland, Tenn., Mississippi Rivers
2001	Green and Tradewater Rivers
2002	Big & Little Sandy Rivers, Tygarts Creek

Each BMU will be monitored extensively every five years. The intent is to gain a better understanding of overall conditions and pollutants impairing various watersheds, target pollution problems, involve various agencies and the public in the design of effective solutions, and measure success through monitoring and data gathering.

Figure 4**Swimming Advisories in Kentucky**

*Note: Intensive surveys of selected waterways began in 1990. *No beach closures in 1994-98. **Advisories were also issued for all urban waterways. Source: Ky. Div. of Water, Ky. Department for Public Health*



In 1998 swimming advisories were reissued along the Upper Cumberland River, Licking River, North Fork of the Kentucky River.

Figure 5**Top Ten Polluted Waterways in Kentucky (1997)**

Stream	County/River Basin	Miles Impaired
North Fork Ky. River	Multicounty/Kentucky	87.4
Floyds Fork	Multicounty/Salt	54.2
Levisa Fork	Multicounty/Big Sandy	46.3
Fleming Creek	Fleming/Licking	39.2
Little River	Multicounty/L. Cumb.	37.4
Tug Fork	Martin/Big Sandy	31.4
Pond/Fern Creek	Jefferson/Salt	29.8
Banklick Creek	Kenton/Licking	19.0
Roaring Paunch Ck.	McCreary/U. Cumb.	15.6
S. Fork Beargrass Ck.	Jefferson/Ohio	14.6

Note: Based on monitored waterways not supporting two or more uses by most miles impaired. Source: Ky. Div. of Water

Indicator 2: Water Quality of Lakes

BACKGROUND

Thousands of lakes provide Kentuckians with recreational and economic benefits as well as supply several communities with primary and secondary sources of drinking water. The Kentucky Division of Water estimates there are 2,271 lakes in Kentucky, of which 953 are greater than ten acres in size. The Division monitors most publicly owned lakes every five to seven years. Publicly owned lakes are owned or managed by a city, county, state, or federal agency.

SOURCE

Agriculture remains the leading source of lake pollution in Kentucky, accounting for about 32% of the pollution problems detected in monitored public lakes during 1997. Natural conditions, such as shallow lake basins, are impairing eight of the 33 lakes impacted by pollution, while coal mining accounts for 12.5% of the water quality problems of monitored public lakes.

GOAL

Safeguard from pollution the uncontaminated waters of the Commonwealth; prevent the creation of any new pollution of the waters of the Commonwealth; and abate any existing pollution per KRS 224.70-100.

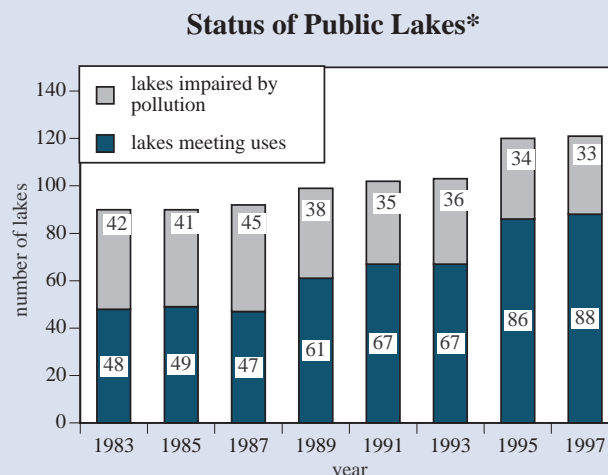
PROGRESS

During the past 14 years, trends reveal a general improvement in the number of monitored public lakes meeting their designated uses for swimming, fishing, or as a drinking water source. But problems remain. One in four public lakes assessed during 1997 was impaired by pollution.

Figure 6

*Based on publicly owned lakes assessed. **Based on 33 public lakes assessed not meeting or partially meeting designated uses. Some lakes have multiple sources of pollution which are reflected in this chart. ***Adds additional nutrients to increase fish stocks. Excessive nutrients can cause a proliferation of weeds and affect aquatic and recreational uses. ****Chemicals (PCBs, metals) of unknown origin found in sediment. *****Active, inactive, abandoned coal mines. Source: Ky. Division of Water

Public Lakes in Kentucky Impaired by Pollution



Sources of Lake Pollution in Ky. (1997)**

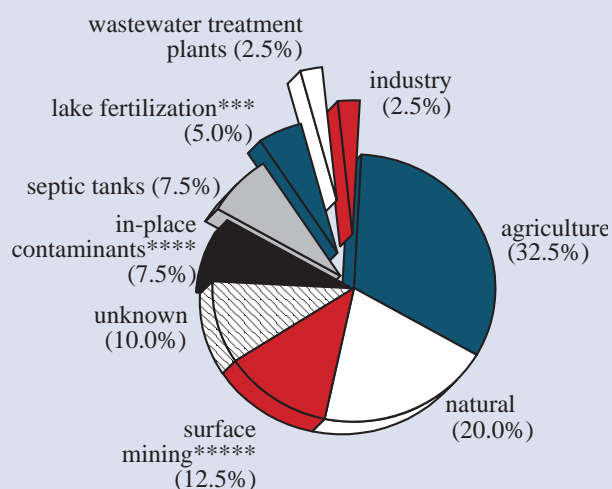


Figure 7

Most Polluted Public Lakes in Kentucky (1998)

Lake/County	Listed	Cause	Source
Loch Mary/Hopkins	1980	metals, inorganics	acid mine drainage
Briggs/Logan	1983	nutrients	lake fertilization
Corbin/Laurel	1983	nutrients	wastewater, agriculture
Metcalfe/Metcalfe	1983	nutrients	agriculture
Reformatory/Oldham	1980	nutrients	livestock
Sympton/Nelson	1998	nutrients	livestock

Note: Monitored lakes not supporting designated uses.

Source: Ky. Division of Water

Indicator 3: Fish Kills and Fish Consumption Advisories

BACKGROUND

Kentucky's waterways provide habitat to numerous species of plants, animals, and fish. But pollution and ecosystem alterations, such as dams and the removal of vegetation alongside of waterways, have impacted populations of several species of aquatic life. For example, 40% of the state's 103 native mussels now are considered rare and 67 species of freshwater fish are considered at risk due to pollution and ecosystem alterations. In some cases, pollutants have contaminated fish tissue making it unsafe for human consumption.

SOURCE

In 1997, more than 1,900 of the 6,363 miles of waterways monitored for aquatic life could not support or only partially support healthy aquatic life populations.

GOAL

Ensure that the waters of the Commonwealth support healthy fish populations and assure that the fish are safe to eat.

PROGRESS

During the past 17 years, trends reveal a general decline in the number of fish kill incidents reported in the state. In 1997, 16 incidents killed 16,000 fish along 17.5 miles of streams. Sewage was the leading cause of fish kills followed by fuel spills.

Six fish consumption advisories remain in effect in Kentucky. PCBs (probable human carcinogens, according to the U.S. EPA and CDC) are the contaminant of concern in five of the six advisories. Chlordane is also of concern in the Ohio River advisory, and mercury is responsible for the sixth advisory.

Figure 8

Fish Kill Incidents in Kentucky

Source: Ky. Reports to Congress on Water Quality, Ky. Department of Fish and Wildlife Resources

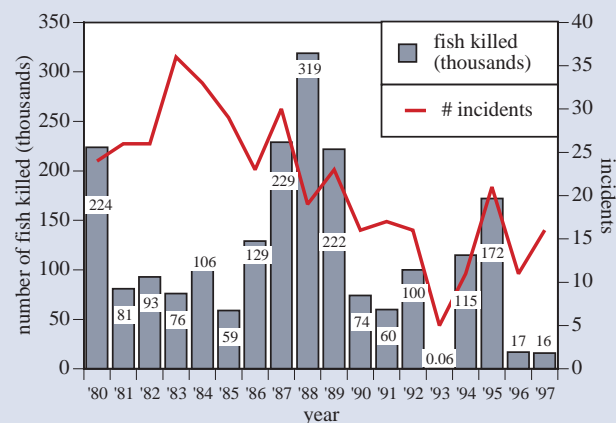


Figure 9

Fish Consumption Advisories in Effect in Kentucky

Stream	pollutant	year listed	miles	source	fish
Town Br./Mud Rvr. (Logan, Butler, Muhlenberg)	PCBs	1985	71.5	dye-cast plant	all species
West Fork Drakes Creek (Simpson, Warren)	PCBs	1985	46.9	adhesive plant	all species
Little Bayou Creek (McCracken)	PCBs	1985	6.5	gaseous diffusion plant	all species
Ohio River* (entire length Ky. border)	PCBs chlordane	1989	663.9	industry urban runoff	**
W. Ky. Wildlife Area (McCracken)	mercury	1993	5 ponds	unknown	bass
Green River Lake (Taylor, Adair)	PCBs	1994	entire lake	gas compression station	catfish carp

*The Ohio River advisory based on Great Lakes Advisory Protocols. Other advisories based on U.S. FDA action level guidelines. **All paddlefish are unsafe to eat. Carp, channel catfish, smallmouth buffalo, white bass, white crappie, hybrid striped bass, drum, sauger, black bass, blue catfish are safe to eat in measured amounts. Source: Ky. Div. of Water

Indicator 4: Groundwater Quality

BACKGROUND

Groundwater is a valuable resource in Kentucky. An estimated 618,323 million Kentuckians are served by 445 community and noncommunity public drinking water systems that rely on groundwater for supplies. During 1997, these systems were permitted to withdraw 60 million gallons a day to meet drinking water needs. Another half million Kentuckians depend on private groundwater wells for drinking water, according to Census data. In addition, millions of gallons of groundwater are withdrawn by businesses, industries, and farmers to meet their water supply needs. Groundwater also contributes significantly to surface water flow and quality. In dry periods, the flow of some streams may be supplied entirely by groundwater.

SOURCE

Groundwater contamination incidents have been reported in almost every county of the Commonwealth. There are numerous threats to groundwater resources including leaking underground storage tanks, waste sites, and improper land application and disposal of agricultural and lawn chemicals. Groundwater contamination is often difficult, and sometimes impossible, to clean up.

GOAL

Protect the waters of the Commonwealth.

PROGRESS

The Kentucky Division of Water established an ambient groundwater quality monitoring network in 1995 to enhance the knowledge of groundwater quality. Water samples are collected quarterly from 112 sites across the state and tested for nutrients, metals, inorganic chemicals, volatile organic chemicals, and pesticides (insecticides, fungicides, herbicides).

Figure 10

Groundwater Contamination Incidents in Ky.

¹Cumulative number of tanks with confirmed groundwater contamination. ²Cumulative estimate based on CERCLA Superfund sites investigated. ³Based on active and closed landfills monitoring groundwater. ⁴Hazardous waste treatment, storage, and disposal permitted and nonpermitted facilities.

Source: Ky. Division of Waste Management

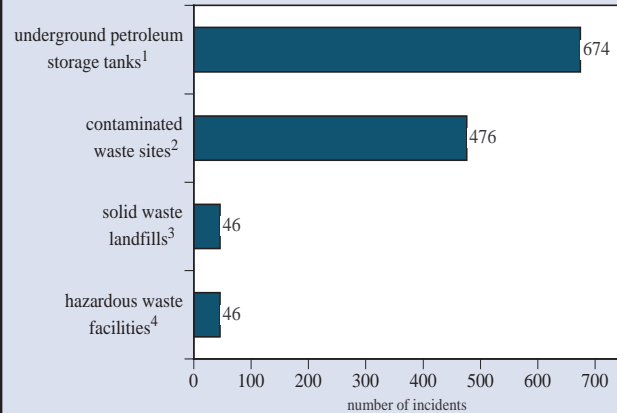


Figure 11

Ambient Groundwater Well Testing Program in Kentucky (Selected Parameters)

Note: Based on tests conducted between 1995-1998. *Detections above Maximum Contaminant Level or Health Advisory Limit.

Source: Ky. Division of Water

Parameter	springs/wells sampled	# of samples	% detects	% detects above standards*
Alachlor				
springs	71	605	4.3	0
wells	56	285	1.1	0
Atrazine				
springs	71	778	21.4	1.4
wells	56	424	2.8	0
Metolachlor				
springs	71	595	15.0	9.9
wells	56	285	0.4	0
Nitrate-N				
springs	48	205	99.0	0
wells	40	135	92.0	5.2
Arsenic				
springs	71	1,642	1.3	0
wells	56	982	14.0	3.5
Simazine				
springs	71	734	5.0	0
wells	56	413	0	0
Fluoride				
springs	71	329	99.0	0
wells	56	191	99.0	0

Preliminary data for selected parameters from the ambient groundwater monitoring network reveal varying levels of pesticides and other pollutants in water samples. For example, atrazine, a common agricultural herbicide used in corn production, was detected in 21% of the spring samples, and arsenic was found in 14% of the well samples. Most detections of these and other agricultural chemicals were in the Pennyroyal region of the state. Several samples exceeded safe drinking water or health advisory standards.

During the 1997 and 1998 growing seasons, the Kentucky Division of Pesticides also contracted with the Division of Water to monitor 14 sites in Woodford, Fayette, Hardin, Daviess, Warren, Christian, Logan, and Todd counties for pesticide contamination. In 1997, eight karst springs and five private wells were monitored, generating 48 samples. In 1998, nine karst springs and five private wells were tested generating 49 samples. The results of the two-year survey indicate that both wells and springs showed detections of pesticide contamination; however, karst springs yielded the highest levels of pesticide contamination. The survey found that karst springs are particularly vulnerable to contamination from agricultural pesticides (atrazine, simazine, metolachlor, and acetochlor). Two karst spring samples taken from Logan County's Mud Spring in 1998 found levels more than twice the drinking water standard for atrazine.

A recently published study of nitrate/nitrogen contamination by the Kentucky Interagency Ground-Water Monitoring Network found 9.7% of the 391 hand-dug wells tested had nitrate levels above Maximum Contaminant Levels (MCL) while 3.7% of the 2,903 constructed wells (depth 51 ft. to 500 ft.) sampled had unsafe levels of nitrate/nitrogen contamination. The study also sampled 1,108 springs in Kentucky and found 3% had nitrate/nitrogen levels above the MCL.

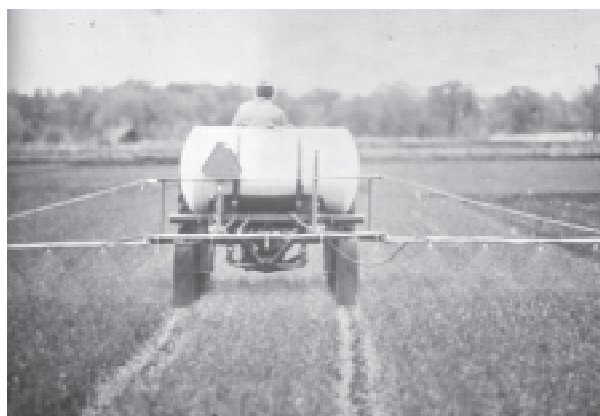
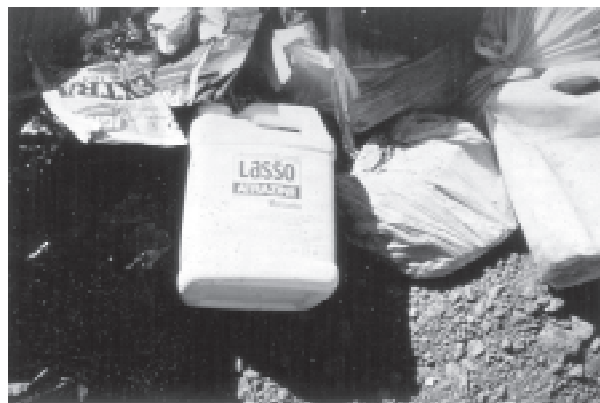
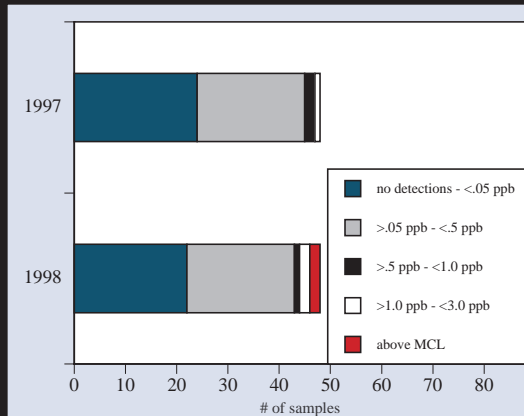
These studies show that varying levels of pesticides and nitrates have impaired the quality of groundwater in Kentucky. However, much more data and analysis are needed in order to assess trends determine the overall condition of Kentucky's groundwater resources.

Several measures have been undertaken to protect groundwater resources in Kentucky. These include a 1994 state regulation requiring facilities that have the potential to pollute groundwater to develop and implement groundwater protection plans by August 1995. To date, 161 site specific and eight generic plans have been reviewed by the Kentucky Division of Water and 85 plans have been approved. The state Agriculture Water Quality Act of 1994 also requires all farm and silviculture operations to prepare water quality plans by October 2001 to protect surface and groundwater. The Kentucky Division of Conservation reports that 970 plans in 64 counties have been prepared to date.

Figure 12

Atrazine Testing in Selected Springs and Wells in Kentucky

Based on samples from 13 well and spring sites in 1997 and 14 well and spring sites in 1998. Source: Ky. Division of Pesticides



Indicator 5: On-Site Sewage Disposal

BACKGROUND

While most of the focus of the Clean Water Act has been on controlling pollution from large municipal and industrial sources, failing septic systems and illegal straight pipe discharges of sewage from homes and businesses are contributing to pollution problems in a number of Kentucky waterways.

SOURCE

Forty-four percent of the state's households rely on septic tanks and other on-site systems for sewage treatment, according to 1990 U.S. Census data. It is not known how many failing septic systems and illegal straight pipes are discharging raw sewage into waterways, but it is considered a widespread problem across the state.

GOAL

Protect the waters of the Commonwealth through the proper construction, installation, and alteration of on-site sewage disposal systems (KRS 211.350).

PROGRESS

Each year, thousands of on-site septic system permits are issued by local health departments. However, the Kentucky Department for Public Health reports that an estimated 5,000 homes are built each year with illegal straight pipe sewage discharges or inadequate septic systems. Kentucky began to focus more attention on this problem during the past few years and some progress has been made. Senate Bill 18 was passed by the 1998 General Assembly to prohibit the connection of electricity to a new residence unless the owner has an approved plan to install adequate sewage-disposal facilities. The effect of this legislation is already being realized with a 400% increase in on-site sewage permits in Pike County alone. The Department for Public Health expects a statewide rise in on-site sewage permits of 40% to 50% in response to the law.

In 1998, a \$4 million grant from the U.S. Department of Commerce was awarded to a 40-county area along the Kentucky River to address existing septic tank problems. The grant will establish a revolving loan fund to provide low-interest loans to homeowners who have straight pipe sewer lines or failing septic tanks. The funds are expected to assist 35 to 50 households per county resolve on-site sewage problems.

State legislation was also passed in 1998 to address discharges of untreated sewage from houseboats. It is estimated that half of the 4,000 houseboats on Kentucky's waters are discharging untreated sewage to waterways, according to the bill's sponsor, state Representative Steve Nunn. The bill will require all houseboats with marine toilets to have sanitation devices to treat or store wastewater and all marinas to have sewage pumpout stations by July 15, 2000.

Figure 13

On-Site Sewage Disposal Permits Issued in Kentucky

Note: Based on state fiscal year. Data on septic tank permits prior to 1992-93 not available. Source: Ky. Dept. for Public Health

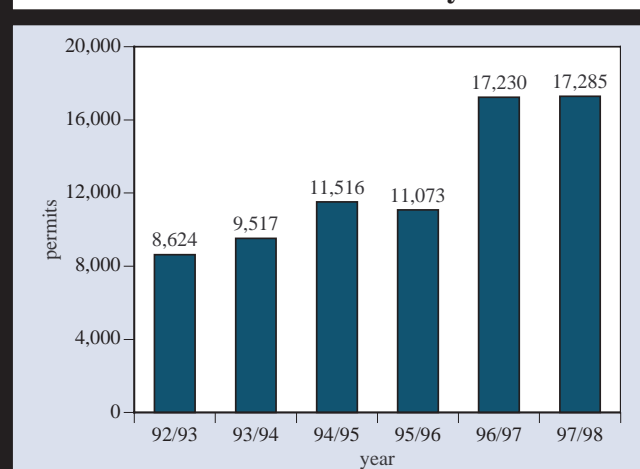
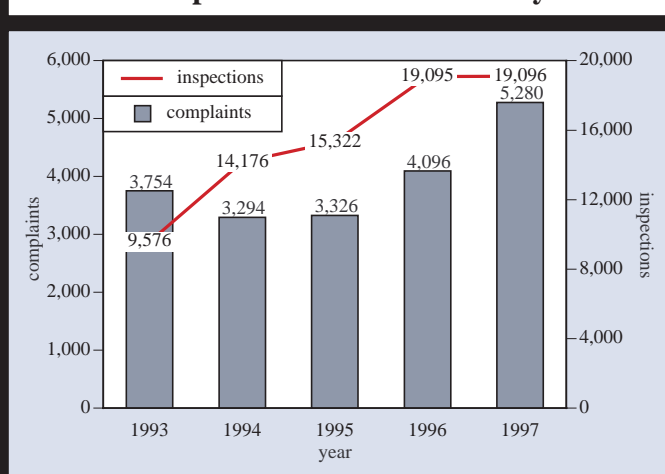


Figure 14

On-Site Sewage Disposal Inspection and Complaint Trends in Kentucky

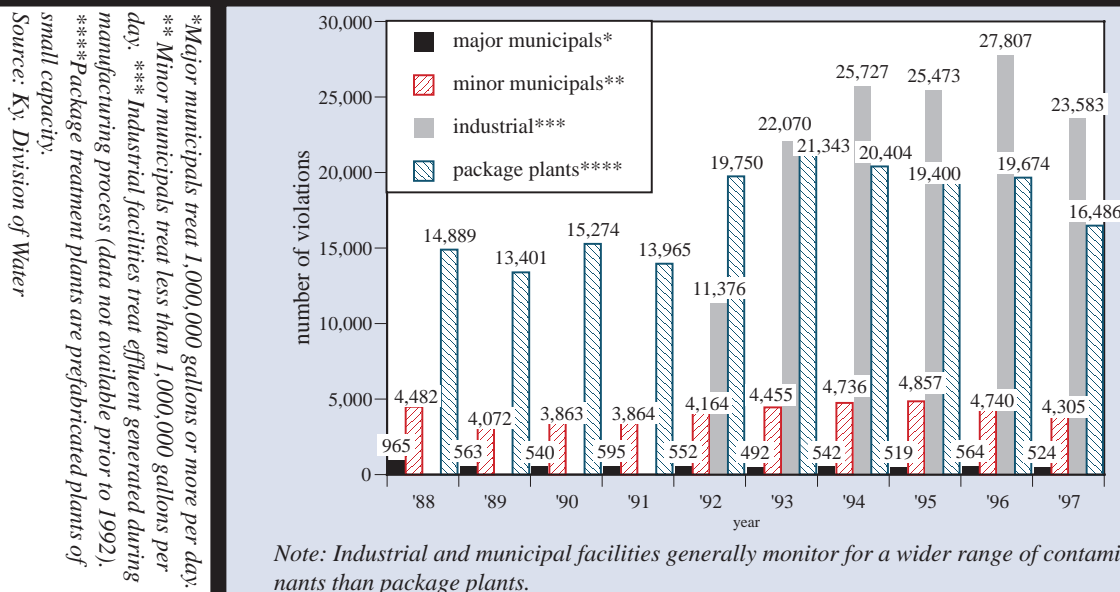
Source: Ky. Department for Public Health



Indicator 6: Wastewater Treatment Facilities

Figure 15

Violation Trends at Wastewater Treatment Facilities in Kentucky



BACKGROUND

In 1997, wastewater treatment plants were the third leading source of pollution to monitored waterways. The environmental and health implications from the poor operation of these plants can be severe, impairing water quality with disease-causing bacteria and nutrient-laden effluent. In addition to degrading surface water, sewage can migrate into groundwater through the limestone karst underlying almost half of Kentucky.

SOURCE

In 1997, 3,089 wastewater treatment facilities were permitted to operate in Kentucky. They include 1,326 industrial, 243 municipal, and 1,520 package treatment plants.

GOAL

Protect the waters of the Commonwealth by ensuring compliance with state and federal water rules, regulations, permits, and orders.

PROGRESS

Although water quality improvements have been achieved through the construction and upgrading of wastewater treatment plants, the poor operation of a number of plants are polluting several waterways with pathogens, nutrients, and metals. During 1997, 66% of the 3,089 permitted wastewater plants had one or more violations of water quality regulations. While 70% of the 45,373 violations cited were either monitoring or reporting infractions, 30% (13,633 violations) were violations of permit limits established to protect public health and the environment.

Package treatment plants account for 45% of the wastewater permit limit violations in the state. Poor maintenance

Figure 16

Types of Wastewater Treatment Plants and Violations of Regulatory Requirements (1997)

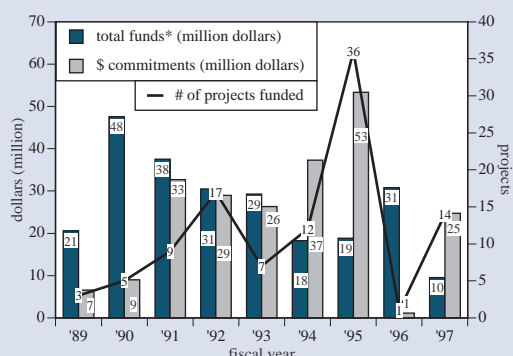
type of plant	number of plants	# of plants in violation	% plants in violation	total violations*	violations of permit limits
Major Municipal	67	55	82%	524	517
Minor Municipal	176	143	81%	4,305	2,169
Major Industrial	60	49	82%	475	466
Minor Industrial	1,266	831	67%	23,583	4,382
Package	1,520	970	64%	16,486	6,099
Total	3,089	2,048	66%	45,373	13,633

*Includes permit, monitoring, reporting violations. Source: Ky. Division of Water

Figure 17

Kentucky Wastewater Revolving Loan Fund

* Includes federal grants, state match, and interest incurred.
Source: Ky. Division of Water



nance and operation at a number of facilities have led the state to target problem plants for removal or regionalization. Since 1995, 186 package plants have been deactivated.

Efforts to upgrade and build new municipal wastewater treatment plants continue. Millions of dollars in federal, state, local, and private funds have been invested in wastewater treatment. For example, since 1989, 104 projects totaling \$220 million have been funded through a low-interest state wastewater revolving loan program. The Louisville Jefferson County Metropolitan Sewer District (MSD) alone will spend \$100 million over the next five years on plant improvements to be financed by local bonds. But an estimated \$3.2 billion is still needed over the next 20 years to meet statewide wastewater construction needs.

The state is also working to prevent the discharge of pollutants to waterways through the use of pretreatment programs. Pretreatment programs are in effect at 662 industrial facilities in 65 cities. This program requires the pretreatment of industrial wastewater prior to its discharge to a municipal wastewater treatment plant. During 1997, 96 of the 662 industries (14.5%) regulated by pretreatment programs were in significant noncompliance. This is an increase since 1996 when 56 industries were in violation. The increase is attributed to the addition of Kentucky Division of Water staff to review pretreatment programs and the increasing use of computer databases by municipalities to review their performance.

Sewer overflows into waterways are a concern as well. Combined sewer overflows (CSOs) are a problem in older cities where stormwater runoff is carried in sanitary sewer pipes. During storms, the sewers overflow and discharge raw sewage into receiving waters. The Kentucky Division of Water has identified 17 cities with 306 CSO outfall points. Louisville has the greatest number of CSOs at 118. MSD estimates that it will cost up to \$200 million to address CSOs (ten times what the agency spends each year on new wastewater construction).

Figure 18

Pretreatment Programs in Significant Noncompliance (1997)

wastewater treatment plant	# industrial users	# in non-compliance
Ashland	7	1
Bardstown	16	2
Berea	8	1
Bowling Green	25	2
Campbell/Kenton Co.	49	1
Campbellsville	6	1
Carrollton	7	4
Corbin	9	1
Danville	7	1
Elizabethtown	19	2
Elkton	1	1
Frankfort	15	2
Franklin	10	1
Fulton	5	4
Georgetown	7	4
Glasgow	14	6
Lawrenceburg	5	1
Lebanon	6	2
Leitchfield	11	3
Lexington	34	6
London	9	3
Louisville	121	12
Madisonville	7	3
Mayfield	5	5
Maysville	7	1
Morehead	6	1
Mount Sterling	7	6
Murray	4	1
Nicholasville	6	1
Owensboro	21	1
Paris	8	5
Princeton	2	1
Richmond	23	1
Russellville	6	1
Shelbyville	15	2
Somerset	27	2
Stanford	2	2
Williamsburg	3	1
Williamstown	3	1
Total (1997*)	39	543
Total (1996*)	21	340
Total (1994*)	19	339
Total (1992*)	27	413

*July-December reporting period. Source: Ky. Div. of Water

Indicator 7: Enforcement

BACKGROUND State efforts to restore water quality have primarily emphasized the control of industrial and municipal discharges into waterways. Under the federal Clean Water Act of 1972 and state law, the discharge of pollutants into the waters of the Commonwealth is prohibited unless a Kentucky Pollutant Discharge Elimination System (KPDES) permit is issued. These permits limit the amount of pollutants discharged, require monitoring, and must be renewed every five years.

SOURCE There are many activities that have the potential to pollute water which are subject to state water quality regulations. These include the 2,151 individual KPDES industrial, coal mining, and municipal water discharge facility permits, oil and gas operations, agricultural operations, illegal dumps, straight pipe sewage discharges, and spills.

GOAL Protect the waters of the Commonwealth by ensuring compliance with water rules, regulations, permits, and agreed orders.

PROGRESS Many water quality improvements are a result of enforcement of Clean Water Act rules. Water inspections hit an all-time high in 1993, totaling 13,490. Total inspections has since steadily declined and numbered 8,731 in 1997. Total violations cited has declined as well, dropping 53% between 1992 and 1997. The decline of inspections in 1997 is attributed to the floods of March 1997 and 452 open dump inspections conducted by Kentucky Division of Water inspectors which are not reflected in Figure 19. In 1997, Kentucky Division of Water field inspectors worked 2,517 hours addressing flood-related issues.

Industrial and municipal facilities were the greatest violators of clean water rules, accounting for 56% of the 672 violations cited in 1997 by field inspectors. In addition, the Kentucky Division of Water's KPDES Branch reports that for the quarter July-September 1998, 58.7% of the 2,151 KPDES facility permits were in significant noncompliance (SNC) for failure to report required monitoring results while 2.2% were in SNC for effluent discharges above permitted limits. Though the number of facilities in SNC for reporting violations is high, most submit their monitoring reports within a reasonable amount of time, according to state officials.

Many violations issued in the field are in response

Figure 19

Water Quality Violations/Penalty Trends

*Note: Does not include coal mining water violations and penalties. *Violations cited by field inspectors. **Penalties assessed by the Div. of Water, Enforcement Branch (does not include drinking water or federal government penalty assessments). ***Data not separated by individual sources (municipal or industrial facilities).*
Source: Ky. Division of Water

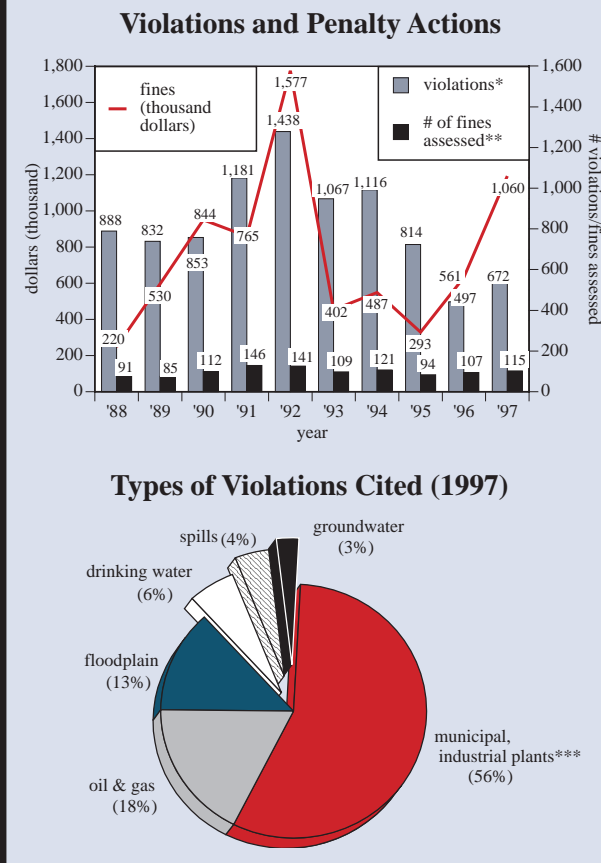


Figure 20

Citizen Water Complaints in Kentucky

*Note: Complaints received by the Division of Water. *Increase in complaints attributed to Russell County proposed sewage treatment plant pipeline to Lake Cumberland.*
Source: Ky. Division of Water

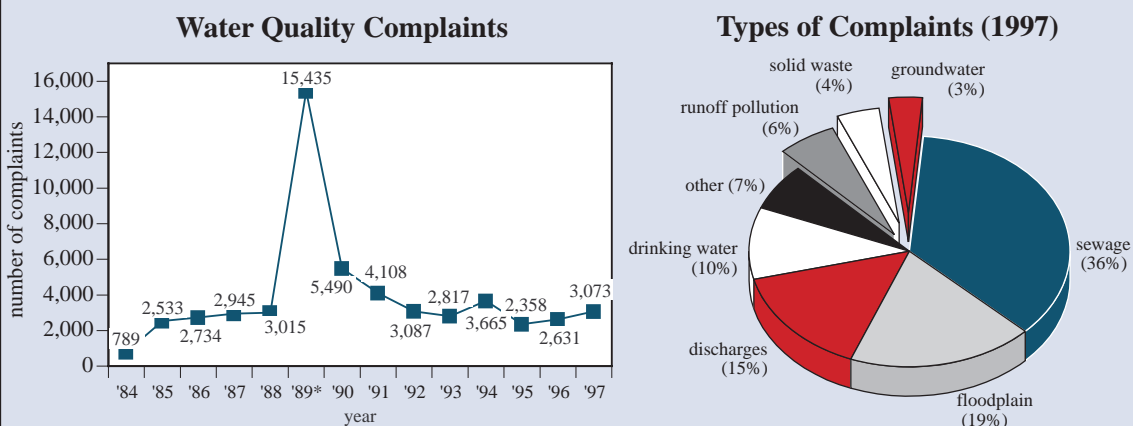
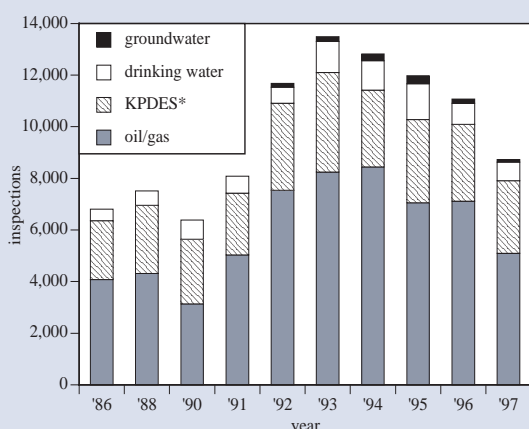


Figure 21

Ky. Water Quality Inspection Trends

*Note: *Facilities with Ky. Pollution Discharge Elimination System permits. Does not include inspections at KPDES permitted coal mines which are conducted by the Ky. Dept. of Surface Mining. Does not include complaint inspections.*
Source: Ky. Division of Water



to citizen complaints. More than half of the 3,073 complaints received by the Kentucky Division of Water in 1997 concerned sewage or improper discharges to waterways.

Most violations are resolved through agreed orders or other means; however, some of the more serious infractions result in fines. During 1997, \$1.06 million in penalties was assessed against 115 entities, 49 of which were permitted facilities. The fines assessed in 1997 were the second largest on record since EQC began tracking penalties in 1989. The increase is attributed to large penalties assessed against DuPont (\$62,500), the Greater Cincinnati/Northern Kentucky Airport (\$100,000), and the two Circuit Court judgements from cases that originated in 1991 (\$70,000) and 1992 (\$150,000). The fine against the Greater Cincinnati/Northern Kentucky Airport was resolved through the use of a Supplemental Environmental Project (SEP). The airport agreed to pay \$50,000 of the fine and purchase a \$250,000 machine to sweep the airport tarmac for excess airplane deicing fluid that was running into nearby streams.

Figure 22 Major KPDES Facilities in Significant Noncompliance*

Facility	County
BTR Precision Die Casting	Logan
Henderson STP #2	Henderson
Hopkinsville Hammond Wood STP	Christian
Am. Electric Power Big Sandy Plant	Lawrence
McCracken Co. SD#3 (Reidland)	McCracken
Paris STP	Bourbon
Russellville STP	Logan
US Army Armour Ctr. & Fort Knox	Hardin
Westlake CA & O Corp.	Marshall
Worldsource Coil Coatings	Hancock

*Note: STP - sewage treatment plant. Significant noncompliance is defined as those facilities with two to four exceedances of permit limits in a six month period based on type of pollutant. Major facilities currently include 69 major municipal wastewater treatment plants that treat one million gallons or more per day, 68 industrial, and four federal facilities based on chemical and conventional pollutants, flow, and potential to impact health and water quality. *As of Nov. 1998. Source: Ky. Division of Water*